

have found that cyclic decreases in grouse populations are correlated with population density.

In the paper mentioned above, Christian assumes that in species not known to be cyclic, e.g., the Beaver, *Castor canadensis*, the population is held below the critical level by other factors, such as predation by man. It seems possible, however, that collapse of the adreno-pituitary system, with resulting shock disease, in voles and hares is in itself an adaptation to reduce the population of these prolific, short-lived species drastically at times of over-abundance, so that the stresses on the remaining nucleus of breeding stock are quickly alleviated. Wolves and other carnivores, on the other hand, are so very resistant to cold, semi-starvation and other privations that they may never be subject to sudden hormonal deficiencies caused by stress. In man himself, adreno-pituitary exhaustion is often a physiological symptom of schizophrenia resulting from stress—a condition not necessarily fatal (White, *op. cit.*). An even more gradual impairment of the hormonal defense mechanism is implied in the suggestion that the greater average longevity of women as compared with men reflects a "better-damped reaction to stress" (Comfort, 1950).

Investigation of the role played by hormonal deficiencies in population fluctuations among birds will require both field and laboratory studies. The hormones involved in the physiological adjustment of the mammal to stress are proving of great significance in medicine and biology. Does a similar physiological mechanism exist in birds?

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THE DINGELL-JOHNSON ACT: WILL IT BENEFIT BIRD-LIFE?

An eleven-year fight was won on August 9, 1950, with the passage of the Dingell-Johnson Bill (Public Law 681, 81st Congress, 2nd Session). This Act, which will become effective July 1, 1951, will do for fisheries conservation what the Pittman-Robertson Act has done for wild game. Together, these two pieces of legislation will advance all fields of conservation, benefiting bird-life indirectly.

The Dingell-Johnson Act authorizes the appropriation of such moneys as may be collected

from a 10 percent Federal tax on "... fishing rods, creels, reels, and artificial lures, baits, and flies..." for the preceding fiscal year. The bill *authorizes* the appropriation, but the appropriation proper must be made annually by the Congress. In this respect it differs from the Pittman-Robertson Act which, as now amended, sanctions use of the taxes collected from sporting arms and ammunition during the preceding fiscal year without further action by Congress. The money is proportioned to the States, after they have met qualifications similar to those of the Pittman-Robertson Act. The proportionment is thus: 40 percent in the ratio which the area of each State, including coastal and Great Lakes water, bears to the total area of all the States; and 60 percent in the ratio which the number of persons holding paid licenses to fish for sport or recreation in the State bears to the number of such persons in all the States. No State shall receive less than 1 percent nor more than 5 percent of the total amount appropriated; Alaska, Hawaii, Puerto Rico and the Virgin Islands are provided for. No more than 8 percent of the annual appropriation may be used for administration.

Any money which is appropriated to any State and not expended in the two years' time limit may be used in carrying out the research program of the Fish and Wildlife Service in respect to fish of material value for sport and recreation. This provision should make available to the Service money badly needed for research on migratory fish which, like migratory birds, do not lend themselves well to individual State research or management.

The enabling legislation has defined "fish restoration and management projects" to mean projects designed for the restoration and management of all species of fish which have material value for sport or recreation in the marine and/or fresh waters of the United States. Types of projects acceptable under the law include (1) research projects; (2) management investigations; (3) stocking of waters with food and game fishes including an investigation of the efficacy of such projects; and (4) selection, restoration, rehabilitation and improvement of areas of water or land adaptable as hatching, feeding, resting or breeding places for fish. After 1953, not more than 25 percent of the money allotted to each State may be spent for the maintenance of water areas acquired and developed under the provisions of this Act.

Twenty-five percent of the money required for any of the types of projects listed above must be supplied by the individual State, and the remaining 75 percent is provided by the Federal government under the Dingell-Johnson Act, as with the Pittman-Robertson Act. It is estimated that the Federal tax on sport fishing gear will produce an income of about \$3,000,000. If this amount is appropriated by the Congress, and assuming that some 15,000,000 fishing licenses are sold annually, the individual States would receive amounts varying between \$26,000 and \$132,000 from the Federal government for fisheries work. These figures would be increased by the 25 percent matching funds from the several States.

It has recently been announced that the Dingell-Johnson Act, like the Pittman-Robertson Act, will be administered for the Federal government by the Branch of Federal Aid of the Fish and Wildlife Service, Department of the Interior. Most conservationists agree that this is a wise decision, as this Branch has had more than a decade of experience in administering the Pittman-Robertson funds and has already established a high reputation with the wildlife agencies in each of the 48 States and possessions.

It is obvious that the advancement made possible by this Act will benefit the entire conservation field, especially as provisions are made for employing professionally trained personnel for work in every section of the United States and its possessions. The addition of this relatively large number of full-time wildlife biologists to the existing conservation force is certain to elevate many spheres of natural history other than fisheries. Further, the acquisition and management of land and water areas, as made possible by Dingell-Johnson money, should benefit other forms of animal life as well as fish. For example, it has been demonstrated repeatedly that the acquiring and developing of federal migratory waterfowl areas have been of substantial benefit to many forms of birdlife other than waterfowl. Likewise, it is entirely possible that the acquisition and development of water areas, and certain adjoining land

areas, for fisheries purposes will be beneficial in its effect upon many forms of our birds. As a result of the acquisition and developmental program of the Dingell-Johnson Act, ornithologists may expect to have at their disposal many additional outdoor laboratories, with sympathetic and cooperative fellow workers in charge of these areas.

The passage of the Dingell-Johnson Act, notwithstanding the fact that it has been presented annually to the Congress for many years, poses one rather serious problem, namely, that of immediately securing adequately trained personnel. Where will the trained personnel come from, as of July 1, 1951, to carry out the provisions of this legislation in each of the 48 States? This problem has given the State fisheries people much concern as they know only too well that they require personnel trained to secure biological facts, work with sportsmen, and *get practical results on the ground or in the water*. Perhaps the best type of training for state conservation work is that of serving an apprenticeship in the field, working on a typical project, while taking academic training. It is obvious that adequately prepared personnel, with both academic and "practical" experience, cannot be trained in a hurry. Most states will have their projects up for consideration well in advance of July 1, 1951. Where will the personnel be secured to make the best use of the funds then available? Will the fisheries people repeat some of the mistakes made by certain early Pittman-Robertson project-leaders in undertaking general life history studies with inexperienced personnel and thus throw the stigma of "impractical" on all fisheries research under the Dingell-Johnson Act? Will they, in the rush to secure the needed men, settle for individuals whose qualifications do not justify their assuming leadership responsibilities in the States fisheries field but who will assume such leadership merely because they were the first employed and thus have greater seniority? The inroads which will be made upon conservation personnel by the present military preparedness program may further complicate fisheries personnel problems.

There is little question that the Dingell-Johnson Act will go down in history as one of the most important steps forward in the entire field of conservation. We all have cause to rejoice in its passage.—H. S. MOSBY AND W. W. H. GUNN.

GRADUATE RESEARCH IN ORNITHOLOGY

Several readers of *The Wilson Bulletin* have expressed interest in learning the extent to which graduate students in American universities were conducting ornithological research in fulfillment of their thesis requirements for advanced degrees. It would be even more interesting to learn of *all* current bird research in the country, but a compilation of that scope we do not have the temerity to tackle, and the present preliminary summary is limited strictly to research being conducted by graduate students. Editor Sutton requested us to assemble what information we could, and as a start we wrote each of the institutions known by us to encourage theses on ornithological topics.

Some workers object to having current research mentioned in print until it has been completed and published in full and final form. They may feel that publishing the titles below will be interpreted as "staking out claims," a procedure which could, possibly, in some cases, hinder research. Outweighing such hazards, we think, are several benefits. Readers of *The Bulletin* undoubtedly have a lively interest in current ornithological research throughout the country. Some graduate investigations might be of such nature that Wilson Club members, once informed of them, could offer cooperation. In some instances unnecessary duplication of effort might be forestalled. Members planning future graduate work might be aided in their choice of a school. At any rate, your reaction as readers may determine whether the compilation will be attempted in future years.

It is recognized that such an initial effort as this cannot but be incomplete for a variety of